

Abstract

An oxide superconductor includes a textured superconducting material including an array of defects, where the defects are a compound of two elements foreign to the superconductor, plus other elements native to the superconductor. The two foreign elements include one from group A and one from group B (or alternately the two foreign elements include the element uranium and one element from group C), where group A includes Cr, Mo, W, or Nd, group B includes Pt, Zr, Pd, Ni, Ti, Hf, Ce and Th, and group C includes Zr, Pd, Ni, Ti, Hf, Ce and Th. The array of defects is dispersed throughout the superconducting material. The superconducting material may be the $RE_1Ba_2Cu_3O_{7-\delta}$ compound, wherein RE = Y, Nd, La, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb, Lu, Tb; the $Bi_2Sr_2CaCu_2O_x$, $(Bi, Pb)_2Sr_2CaCu_2O_x$, $Bi_2Sr_2Ca_2Cu_3O_x$ and $(Bi, Pb)_2Sr_2Ca_2Cu_3O_x$ compounds; the $HgBa_2Ca_2Cu_3O_8$ and $HgBa_2CaCu_2O_6$ compounds, the $TiCaBa_2Cu_2O_x$ or $Tl_2Ca_2Ba_2Cu_3O_x$ compounds and compounds involving substitution such as the $Nd_{1+x}Ba_{2-x}Cu_3O_x$ compounds.